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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/805,080	03/19/2004	Warren E. Vann JR.	100200327-1	7912

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FORT COLLINS, CO 80527-2400

EXAMINER

GARLAND, STEVEN R

ART UNIT PAPER NUMBER

2125

DATE MAILED: 03/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/805,080

Applicant(s)

VANN, WARREN E.

Examiner

Steven R. Garland

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5-9,11,12 and 14-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-9,11,12 and 14-20 is/are rejected.
- 7) ☒ Claim(s) 21,22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-3,5-9,11,12, and 14-22 are pending. Claims 4,10, and 13 have been cancelled.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 5, 6,8,9,11,12, and 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blake 2003/0137267 in view of Jeong 2003/0131614.

Blake 2003/0137267 teaches a cooling system for an electronic enclosure (abstract). The temperature is sensed at multiple points using thermal sensors (210,211) which can be diodes (paragraphs 0012,0049) mounted on an IC (close proximity to component IC) and which are coupled in parallel; the temperature data is input on a single thermal data channel (203,202) and cooling devices (215,216, paragraph 0048) in the form of fans are controlled. Blake further teaches using the highest temperature to control the fans. (0071) Blake also teaches that thermal diodes may be used for temperature sensing instead of thermistors to lower cost and are also potentially more accurate (0012). See the abstract; figures; paragraphs 0001, 0010, 0012, 0017,0020,0021,0029, 0047,0048,0049,0071, and the claims.

Blake however does not connect the temperature sensors in an electrical parallel configuration or directly connect the temperature sensors to a thermal channel but

instead connects the temperature sensors to a multiplexer 203. Blake also does not state the cooling system is installed inside a computer enclosure, that the electronic components IC's can be processors, or that the temperature of the warmest processor controls the fans. Blake however expressly teaches using the warmest component to control the fans in paragraph 0071.

Jeong 2003/0131614 teaches connecting temperature sensors in a parallel electrical configuration (fig. 3A), placing a plurality of sensors at various locations (fig.2), input of the temperature data on a direct connection to a single input port on a microcomputer (0051). See fig. 3A and its description for example. Jeong also teaches that the sensors can all be a single kind of sensor having the same operating characteristics (bimetallic or thermistor) or a mixture of sensors can be used (0021). Jeong teaches that the use of multiple sensors at multiple locations reduces incorrect temperature sensing and the use of a single input data channel for multiple sensors reduces the number of required input ports (0014-0020). See the abstract, figures, paragraphs 0014, 0017-0021, 0031-0038, 0047-0051, and the claims.

It would have been obvious to one of ordinary skill in the art to modify Blake in view of Jeong and connect the temperature sensors in parallel and directly to the input port to reduce the circuit complexity as taught by Jeong.

It would have been obvious to one of ordinary skill in the art to use the system of Blake and Jeong to control the temperature inside a computer enclosure having one or more processors IC's so that the processors are maintained at proper operating temperature.

Further in view of the express teaching of Blake (0071) it would have been obvious to one of ordinary skill in the art to modify Blake and Jeong to control the fans in response to the warmest processor IC to prevent overheating of any of the components.

4. Claims 7, 19, and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Blake 2003/0137267 in view of Jeong 2003/0131614 as applied to claims 1-3, 5, 6, 8, 9, 11, 12, and 14-18 above, and further in view of the article " Analog Devices -- dBCOOL (tm) Remote Thermal Controller and Voltage Monitor ADM 1027 " (cited by applicant).

Blake 2003/0137267 teaches a cooling system for an electronic enclosure (abstract). The temperature is sensed at multiple points using thermal sensors (210, 211) which can be diodes (paragraphs 0012, 0049) mounted on an IC (close proximity) and which are coupled in parallel; the temperature data is input on a single thermal data channel (203, 202) and cooling devices (215, 216, paragraph 0048) in the form of fans are controlled. Blake further teaches using the highest temperature to control the fans. 0071 Blake also teaches that thermal diodes may be used for temperature sensing instead of thermistors to lower cost and are potentially more accurate (0012). See the abstract; figures; paragraphs 0001, 0010, 0012, 0017, 0020, 0021, 0029, 0047, 0048, 0049, 0071, and the claims.

Blake however does not connect the temperature sensors in an electrical parallel configuration or directly connect the temperature sensors to a thermal channel but instead connects the temperature sensors to a multiplexer 203. Blake also does not state the cooling system is installed inside a computer enclosure, that the electronic

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components IC's can be processors, or that the temperature of the warmest processor controls the fans. Blake however expressly teaches using the warmest component to control the fans in paragraph 0071.

Jeong 2003/0131614 teaches connecting temperature sensors in a parallel electrical configuration (fig. 3A), placing a plurality of sensors at various locations (fig.2), input of the temperature data on a direct connection to a single input port on a microcomputer (0051). See fig. 3A and its description for example. Jeong also teaches that the sensors can all be a single kind of sensor having the same operating characteristics (bimetallic or thermistor) or a mixture of sensors can be used (0021). Jeong teaches that the use of multiple sensors at multiple locations reduces incorrect temperature sensing and the use of a single input data channel for multiple sensors reduces the number of required input ports (0014-0020). See the abstract, figures, paragraphs 0014, 0017-0021, 0031-0038, 0047-0051, and the claims.

It would have been obvious to one of ordinary skill in the art to modify Blake in view of Jeong and connect the temperature sensors in parallel and directly to the input port to reduce the circuit complexity as taught by Jeong.

It would have been obvious to one of ordinary skill in the art to use the system of Blake and Jeong to control the temperature inside a computer enclosure having one or more processors IC's so that the processors are maintained at proper operating temperature.

Further in view of the express teaching of Blake (0071) it would have been obvious to one of ordinary skill in the art to modify Blake and Jeong to control the fans in response to the warmest processor IC to prevent overheating of any of the components.

Blake and Jeong however do not expressly state that the multiple fans are the same, or that transistors can be used to sense the temperature.

The article "Analog Devices --dBCOOL (tm) Remote Thermal Controller and Voltage Monitor ADM 1027" (cited by applicant) teaches temperature sensing at multiple points and that the temperature sensors can be thermal diodes or transistors. See page 6, column 1 and also page 14. Note page 6, column 1, teaches the use of transistors (note plural) such as 2N3906 which are clearly identical transistors. The article on pages 20, 21, etc. also teaches control of the same kind of fans.

It would have been obvious to one of ordinary skill in the art to modify Blake and Jeong in view of the article and use transistors connected in a diode configuration to implement the thermal diodes as expressly taught by the article.

Further it would have been obvious to one of ordinary skill in the art to modify Blake and Jeong in view of the article and use the same kind of fans with the same kind of response characteristics to ease implementation and also for ease in replacement of defective components.

5. Claims 21 and 22 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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6. Applicant's arguments with respect to claims 1-3,5-9,11,12, and 14-20 have been considered but are moot in view of the new ground(s) of rejection.

7. The following is a statement of reasons for the indication of allowable subject matter: in regards to claims 21-22, the prior art fails to teach or suggest the features set forth in claim 21 (and its dependent claim 22) including the use of a fan controller having a second thermal channel coupled to a third thermal sensor.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven R. Garland whose telephone number is 571-272-3741. The examiner can normally be reached on Monday-Thursday.

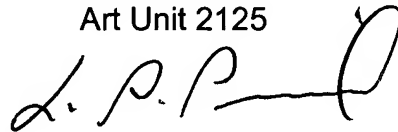
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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SRU

Steven R Garland
Examiner
Art Unit 2125



2/23/06

LEO PICARD
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100